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| 09/933,668      | 08/22/2001  | Hanae Nakatani       | 46271               | 6697             |

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WASHINGTON, DC 20036-3307

EXAMINER

DICUS, TAMRA

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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1774

DATE MAILED: 07/02/2002

3

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/933,668

Applicant(s)

NAKATANI ET AL.

Examiner

Tamra L. Dicus

Art Unit

1775

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 August 2001.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claims 1-4, and 7-9 are rejected under 35 U.S.C. 102(b) as being anticipated by USPN 5,677,067 to Kojima et al.

Kojima discloses several examples of ink jet recording sheets (printing material) comprising a base paper covered on both sides by a polyolefin resin of low and high density polyethylene (same polymers as applicant uses) at col. 7, lines 40-44, with the polyolefin resin-coated paper support (base) having a thickness of 50-300 microns (see col. 7, line 35), where a thickness of the resin coated layer has a thickness of 5-50 microns (see col. 7, line 67), meeting the requirements of claims 2 and 4 values of 8 or more and less than 20 microns. The recording sheet further comprises an ink receptive layer on either one or both sides of the paper (see col. 4,

Art Unit: 1775

lines 50-54), containing inorganic fine particles of antistatic agents or pigments like silica (see col. 4, line 41; col. 5, line 66; col. 13, line 67), a hydrophilic binder of polyvinyl alcohol, and an amphoteric surfactant in an amount of 0.1 to 5% by weight at col. 7, lines 15-19 meeting the limitations of claims 7 and 8 at col. 9, lines 20-32. Kojima further discloses the polyethylene resins used on the base paper may be a low-density polyethylene, a medium-density polyethylene, a high-density polyethylene or a mixture thereof and further explains the low-density polyethylene has a density of  $0.915\text{-}0.930\text{ g/cm}^3$  and the high-density polyethylene has a density of  $0.950\text{ g/cm}^3$  or higher and depending on how the polyethylene resins are used, alone or in combination, it is possible to have different densities at col. 5, lines 15-21, meeting the limitation range of  $0.60\text{ to }1.05\text{ g/cm}^3$ . Since the polymer resins of claim 1 are the same and have a base paper covered in the same polyolefin resin on both sides of the paper (this is equivalent to mean the polyolefin resin layer at the opposite surface) with the same thickness as per instant claim 1, ranging between 50-300 microns at col. 4, lines 58-62 and at col. 5, lines 31-35 the thickness of the resin coated paper on only one side or both sides is between 5-50 microns, which is included in applicant's claimed range of 5-50 microns; therefore, the relation equation  $\{(B+C)/A\}$  will equal 0.15 to 0.45, and the ratio of polyolefin resin layer thicknesses on or opposite the ink receptive layer surface of claim 3 will be less than 1. The limitations of claims 1-4 and 7-9 are met under 35 U.S.C. 102(b).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 1775

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,677,067 to Kojima et al, as applied to claim 1 above.

Kojima discloses the claimed invention, but fails to expressly disclose the inorganic particle amount of 50 to 90 % by weight, as per instant claim 5. However, it would have been obvious to one of ordinary skill in the art to further optimize the amount of particles added because Kojima teaches that in order to control the values of chroma L, a and b at the surface of the support on which the ink-receiving layer is to be coated, various colorants may be added to the base paper layer, the intermediate layer, or the resin coat layer and that the amount of such colorants may be optionally changed depending on the hue characteristics or coating weight in order to exhibit excellent light resistance and heat resistance of the ink-receiving layer at col. 10, lines 10-27.

5. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,677,067 to Kojima et al, as applied to claim 1 above, in view of USPN 5612281 to Kobayashi et al.

6. Kojima is silent to fumed silica having a particle size of 5 nm to 50 nm. Kobayashi teaches processing inorganic fine inorganic silica in a dry process to produce "fumed silica". Kobayashi explains using a flame hydrolysis process in which silicon halide is hydrolyzed in a high-temperature gas phase to obtain silica containing no water, and an arc process in which siliceous sand and coke are heated, reduced and vaporized by means of arc in an electric furnace, followed by oxidizing with air, to obtain anhydrous silica at col. 6, lines 27-39. The silica fine

Art Unit: 1775

particles are 3 to 10 nm and 10 to 100 nm, shown in col. 5, line 50 and col. 6, lines 56-57. This is in applicant's claimed range of 5 to 50 nm. Kobayashi and Kojima are analogous art because both references are from the same field of endeavor, namely ink jet recording. It would have been obvious to one of ordinary skill in the art to modify Kojima's ink jet recording sheet to include fumed silica size of 5 to 50 nm because Kobayashi teaches fumed silica easily forms a three-dimensional structure having particularly high void volume at col. 5, line 15.

7. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Publication 2001/0004487 A1 to Kaneko et al. in view of USPN 5,605,750 to Romano et al. and further in view of USPN 5,677,067 to Kojima et al..

Kaneko discloses a water resistant support such as a plastic resin film including a polyester film, or a resin-laminated paper in which a polyolefin resin such as polyethylene is laminated on the front and/or back surfaces of paper at paragraph [0011], lines 7-11 and paragraph [0057], pp. 5-6, where the thickness of the resin layer range is between 5 and 50 microns, which is included in applicant's ranges of 5 to 25 microns or 8 to 20 microns as per instant claims 1, 2, and 4. The resin layer has an option of containing polyolefin resin may include a homopolymer of an olefin such as low density polyethylene, high density polyethylene, polypropylene, polybutene, polypentene, etc.; a copolymer comprising two or more olefins such as an ethylene-propylene copolymer, etc.; or a mixture thereof, and these polymers having various densities at paragraph [0055]. Since the materials used are the same, the density of the base paper being between 0.60 to 1.05 g/cm<sup>3</sup> is the same. Furthermore, Romano teaches a base paper coated with a microporous layer comprising inorganic silica particles, a matrix of thermoplastic polyolefin resin at col. 3, lines 26-36 made of LDPE,

Art Unit: 1775

MDPE, or HDPE ranging from 0.910-.965 g/cm<sup>3</sup> in Table 1, col. 6, which is included in applicant's range of 0.60 to 1.05 g/cm<sup>3</sup>.

Kaneko does not expressly disclose the base paper being between 50 and 300 microns. Romano teaches the thickness of a base paper support can be between 50 to 500 micrometers, with a preference from 75 to 300 micrometers at col. 2, lines 45-46, which is included in applicant's range of 50 to 300 micrometers. It would have been obvious to one of ordinary skill in the art to modify the ink jet recording material of Kaneko to provide a relation equation  $\{(B+C)/A\}$  to equal 0.15 to 0.45, and a ratio of polyolefin resin layer thickness on or opposite the ink receptive layer surfaces to be less than 1 since the materials and thicknesses are the same as taught by Romano.

8. Regarding claim 5, Romano also teaches the microporous layer comprising inorganic silica particles added in an amount of 40 to 90 weight percent, which is included in applicant's range of 50 to 90% by weight at col. 3, lines 32-36.

9. Regarding claims 1, 5 and 6, inorganic particles such as fumed silica are options for inclusion in an ink receptive layer on a paper support as taught by Kaneko in paragraph [0043]. Kaneko further describes his preference of including fumed silica having an average primary particle diameter of 5 to 30 nm. In paragraph [0044], Kaneko explains these solid fine particles may be added in an amount ranging from 10 to 400% by weight, and that a hydrophilic binder may be added in an amount of 50% by weight or less, which is included in applicant's ranges of 10 to 25% by weight as per instant claim 9.

10. Regarding claim 7, Kaneko teaches adding an amphoteric surfactant in Examples 1 and 2 to the ink-receptive layer.

Art Unit: 1775

11. Regarding claims 7 and 8, Kojima teaches the use of an amphoteric surface active agent (surfactant) added to the ink-receiving (receptive) layer in an amount of 0.1 to 7% by weight at col. 13, lines 45047, which is included in the applicant's range of 0.1 to 5% by weight.

### ***Conclusion***

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- a) US Publication 2001/0014381 A1 to Kaneko et al. teaches an ink jet recording material of polyolefin layers on both sides comprising fused silica of size 3nm to 30 nm, added to an ink receptive layer in an amount of 50 to 60% by weight or more, a hydrophilic binder added in about 40% by weight or less, and an amphoteric surfactant added at 0.3 weight percent.
- b) US Publication 2002/0008753 A1 to Suzuki et al. teaches an ink jet recording material of polyolefin layers on both sides comprising fused silica of size 3nm to 30 nm, added to an ink receptive layer in an amount of 50 to 60% by weight or more, a hydrophilic binder added in about 40% by weight or less, and an amphoteric surfactant added at 0.3 weight percent.



Art Unit: 1775

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tamra L. Dicus whose telephone number is (703) 305-3809. The examiner can normally be reached on Monday-Friday, 7:00-4:30 p.m., alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly can be reached on (703) 308-0449. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-8329 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



Tamra L. Dicus  
Examiner  
Art Unit 1774

June 24, 2002

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